

SEQUENCE LISTING

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<110> GOLDENBERG, DAVID M.
      HANSEN, HANS J.
      LEUNG, SHUI-ON
<120> CHIMERIC, HUMAN AND HUMANIZED ANTI-GRANULOCYTE
      ANTIBODIES AND METHODS OF USE
<130> 40923-0134US1
<140> 10/672,278
<141> 2003-09-29
<150> PCT/GB03/04229
<151> 2003-09-30
<150> 60/414,341
<151> 2002-09-30
<160> 51
<170> PatentIn Ver. 3.2
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Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Asn Thr Tyr Leu Glu
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<210> 3
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Phe Gln Gly Ser His Val Pro Pro Thr
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Lys Gly Trp Met Asp Phe Asn Gly Ser Ser Leu Asp Tyr
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<211> 4
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Phe Lys Tyr Lys
<210> 8
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<222> (1)..(339)
age att gtg atg acc cag act cca ctc tcc ctg cct gtc agt ctt gga
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Ser Ile Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly
gat caa gcc tcc atc tct tgc aga tct agt cag agc att gta cat agt
Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Ser
             20
aat gga aac acc tat tta gaa tgg tac ctg cag aaa cca ggc cag tct
Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser
         35
cca aac ctc ctc atc tac aaa gtt tcc aac cga ttt tct ggg gtc cca
                                                                   192
Pro Asn Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
    50
gac agg ttc agt ggc agt gga tca ggg aca gat ttc aca ctc aag atc
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65
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288

agc aga gtg gag gct gag gat ctg gga gtt tat tac tgc ttt caa ggt

Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly tca cat gtt cct ccg acg ttc ggt gga ggc acc aag ctg gaa atc aaa 336 Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys 105 cgg gctgatgctg caccaactgt atccatcttc ccaccatcca gtgaggatcc ggc 392 <210> 9 <211> 113 <212> PRT <213> Mus musculus Ser Ile Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Ser Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser Pro Asn Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys 105 Arg <210> 10 <211> 366 <212> DNA <213> Mus musculus <220> <221> CDS <222> (1)..(366) <400> 10 cag gtc caa ctg cag gag tct gga cct gag ctg aag aag cct gga gag Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu 5

aca gtc aag ata tcc tgc aag gct tct ggg tat acc ttc aga aac tat Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr 20 25 30	96												
gga atg aac tgg gtg aaa cag gct cca gga aag ggt tta aag tgg atg Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met 35 40 45	144												
ggc tgg ata aac acc tac act gga gag cca aca tat gct gat gac ttc Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Asp Asp Phe 50 55 60	192												
aag gga cgg ttt gcc ttc tct ttg gaa acc tct gcc agc act gcc tat Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Tyr 65 70 75 80	240												
ttg cag atc aac aac gtc aaa aat gag gac acg gct aca tat ttc tgt Leu Gln Ile Asn Asn Val Lys Asn Glu Asp Thr Ala Thr Tyr Phe Cys 85 90 95	288												
gca aga aag gga tgg atg gat ttc aac ggt agt agc ctc gac tac tgg Ala Arg Lys Gly Trp Met Asp Phe Asn Gly Ser Ser Leu Asp Tyr Trp 100 105 110	336												
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Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu													
Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu 1 10 15 Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr													
Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu 15 Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr 20 Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met													
Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr 20 Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met 35 Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Asp Asp Phe													
Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu 1 Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr 20 Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met 35 Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Asp Asp Phe 50 Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Tyr													

Gly Gln Gly Thr Thr Val Thr Val Ser Ser 115 120

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<210> 13

<211> 113

<212> PRT

<213> Artificial Sequence

<220>

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<223> Description of Artificial Sequence: Chimeric
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                                      10
Asp Gln Ala Ser Ile Ser Cys Arg Ser Ser Gln Ser Ile Val His Ser
Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser
Pro Asn Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
Ser Arg Val Glu Ala Glu Asp Leu Gly Val Tyr Tyr Cys Phe Gln Gly
Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
Arg
<210> 14
<211> 366
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Chimeric
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<221> CDS
<222> (1)..(366)
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Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu
aca gtc aag ata tcc tgc aag gct tct ggg tat acc ttc aga aac tat
                                                                   96
Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr
gga atg aac tgg gtg aaa cag gct cca gga aag ggt tta aag tgg atg
                                                                   144
Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met
         35
                             40
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Gly Trp I	ita aac :le Asn													192
aag gga c Lys Gly A 65														240
ttg cag a Leu Gln I	itc aac le Asn	aac Asn 85	gtc Val	aaa Lys	aat Asn	gag Glu	gac Asp 90	acg Thr	gct Ala	aca Thr	tat Tyr	ttc Phe 95	tgt Cys	288
gca aga a Ala Arg L														336
ggc caa g Gly Gln G 1														366
<210> 15 <211> 122 <212> PRT <213> Artificial Sequence														
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	3VH ami	no a	cid	sequ	ence	•					Pro	Gly 15	Glu	
cMN <400> 15 Gln Val G	3VH ami ln Leu	.no a Gln (cid Glu	sequ Ser	ence Gly	Pro	Glu 10	Leu	Lys	Lys		15		
<pre>cMN <400> 15 Gln Val G 1 Thr Val L Gly Met A</pre>	3VH ami ln Leu ys Ile 20	Gln (cid Glu Cys :	sequ Ser Lys	Gly Ala	Pro Ser 25	Glu 10 Gly	Leu Tyr	Lys Thr	Lys Phe	Arg 30	15 Asn	Tyr	
<pre>cMN <400> 15 Gln Val G 1 Thr Val L Gly Met A</pre>	3VH ami ln Leu ys Ile 20 sn Trp 35	Gln (5 Ser (cid Glu Cys :	sequ Ser Lys Gln	Gly Ala Ala 40	Pro Ser 25 Pro	Glu 10 Gly Gly	Leu Tyr Lys	Lys Thr Gly	Lys Phe Leu 45	Arg 30 Lys	15 Asn Trp	Tyr Met	
<pre>cMN <400> 15 Gln Val G 1 Thr Val L Gly Met A</pre>	3VH ami ln Leu ys Ile 20 sn Trp 35	Gln (5 Ser (Val 1	Cid Glu Cys Lys	sequ Ser Lys Gln Thr	Gly Ala Ala 40	Pro Ser 25 Pro Glu	Glu 10 Gly Gly Pro	Leu Tyr Lys Thr	Lys Thr Gly Tyr 60	Lys Phe Leu 45 Ala	Arg 30 Lys Asp	15 Asn Trp Asp	Tyr Met Phe	
<pre>cMN <400> 15 Gln Val G 1 Thr Val L Gly Met A Gly Trp I 50 Lys Gly A</pre>	3VH ami ln Leu ys Ile 20 sn Trp 35 le Asn rg Phe	Gln (5 Ser (Val 1 Thr :	Cys : Lys (Tyr '	Ser Lys Gln Thr 55 Ser	Gly Ala Ala 40 Gly	Pro Ser 25 Pro Glu	Glu 10 Gly Gly Pro	Leu Tyr Lys Thr	Lys Thr Gly Tyr 60 Ala	Lys Phe Leu 45 Ala Ser	Arg 30 Lys Asp	15 Asn Trp Asp	Tyr Met Phe Tyr 80	
<pre>cMN <400> 15 Gln Val G 1 Thr Val L Gly Met A Gly Trp I 50 Lys Gly A: 65</pre>	3VH ami ln Leu ys Ile 20 sn Trp 35 le Asn rg Phe le Asn	Gln (5 Ser (Val 1 Thr 5 Ala 1 Asn \ 85	Cys : Cys : Lys (Tyr ' 70 Val :	Ser Lys Gln Thr 55 Ser	Gly Ala Ala 40 Gly Leu Asn	Pro Ser 25 Pro Glu Glu Glu	Glu 10 Gly Gly Pro Thr	Leu Tyr Lys Thr Ser 75	Lys Thr Gly Tyr 60 Ala	Lys Phe Leu 45 Ala Ser	Arg 30 Lys Asp Thr	15 Asn Trp Asp Ala Phe 95	Tyr Met Phe Tyr 80 Cys	

<210> 16

<211> 108

<212> PRT

<213> Homo sapiens

<400> 16

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Gln Ala Ser Gln Asp Ile Ile Lys Tyr
20 25 30

Leu Asn Trp Tyr Gln Gln Thr Pro Gly Lys Ala Pro Lys Leu Leu Ile 35 40 45

Tyr Glu Ala Ser Asn Leu Gln Ala Gly Val Pro Ser Arg Phe Ser Gly 50 55 60

Ser Gly Ser Gly Thr Asp Tyr Thr Phe Thr Ile Ser Ser Leu Gln Pro 65 70 75 80

Glu Asp Ile Ala Thr Tyr Tyr Cys Gln Gln Tyr Gln Ser Leu Pro Tyr 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Gln Ile Thr Arg
100 105

<210> 17

<211> 113

<212> PRT

<213> Mus musculus

<400> 17

Ser Ile Val Met Thr Gln Thr Pro Leu Ser Leu Pro Val Ser Leu Gly
1 5 10 15

Asp Gln Ala Ser Ile Ser Cys Gln Ser Ser Gln Ser Ile Val His Ser 20 25 30

Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Leu Gln Lys Pro Gly Gln Ser 35 40 45

Pro Asn Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro 50 60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Lys Ile
65 70 75 80

Ser Arg Val Glu Ala Glu Asp Ile Gly Val Tyr Tyr Cys Phe Gln Gly 85 90 95

Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
100 105 110

Arg

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<210> 18
<211> 113
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<213> Artificial Sequence
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<223> Description of Artificial Sequence: Humanized
      amino acid sequence
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Asp Arg Val Ser Ile Ser Cys Gln Ser Ser Gln Ser Ile Val His Ser
Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Gln Gln Lys Pro Gly Lys Ala
Pro Lys Leu Leu Ile Tyr Lys Val Ser Asn Arg Phe Ser Gly Val Pro
Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile
Ser Ser Leu Gln Pro Glu Asp Ile Ala Thr Tyr Tyr Cys Phe Gln Gly
Ser His Val Pro Pro Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys
Arg
<210> 19
<211> 126
<212> PRT
<213> Homo sapiens
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<400> 19 Pro Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Thr Phe Ser Arg Ser 20 Ala Ile Ile Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Gly Ile Val Pro Met Phe Gly Pro Pro Asn Tyr Ala Gln Lys Phe Gln Gly Arg Val Thr Ile Thr Ala Asp Glu Ser Thr Asn Thr Ala Tyr

70

105

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Phe Tyr Phe Cys 85 90 95

Ala Gly Gly Tyr Gly Ile Tyr Ser Pro Glu Glu Tyr Asn Gly Gly Leu 100 105 110

Val Thr Val Trp Gly Gln Gly Thr Pro Val Thr Val Ser Ser 115 120 125

<210> 20

<211> 122

<212> PRT

<213> Mus musculus

<400> 20

Gln Val Gln Leu Gln Glu Ser Gly Pro Glu Leu Lys Lys Pro Gly Glu

1 10 15

Thr Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr 20 25 30

Gly Met Asn Trp Val Lys Gln Ala Pro Gly Lys Gly Leu Lys Trp Met 35 40 45

Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Asp Asp Phe 50 60

Lys Gly Arg Phe Ala Phe Ser Leu Glu Thr Ser Ala Ser Thr Ala Tyr 65 70 75 80

Leu Gln Ile Asn Asn Val Lys Asn Glu Asp Thr Ala Thr Tyr Phe Cys
85 90 95

Ala Arg Lys Gly Trp Met Asp Phe Asn Gly Ser Ser Leu Asp Tyr Trp
100 105 110

Gly Gln Gly Thr Thr Val Thr Val Ser Ser 115 120

<210> 21

<211> 122

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Humanized amino acid sequence

<400> 21

Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser 1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Thr Phe Arg Asn Tyr
20 25 30

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Gly Trp Ile Asn Thr Tyr Thr Gly Glu Pro Thr Tyr Ala Asp Asp Phe
      50
                          55
Lys Gly Arg Phe Ala Phe Thr Ala Asp Glu Ser Thr Asn Thr Ala Tyr
Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Phe Tyr Phe Cys
                 85
Ala Arg Lys Gly Trp Met Asp Phe Asn Gly Ser Ser Leu Asp Tyr Trp
Gly Gln Gly Thr Pro Val Thr Val Ser Ser
        115
                             120
<210> 22
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<213> Homo sapiens
<400> 22
Trp Gly Gln Gly Thr Pro Val Thr Val Ser Ser
<210> 23
<211> 534
<212> DNA
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<223> Description of Artificial Sequence: Synthetic
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      acid sequence
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                      Met Gly Trp Ser Cys Ile Ile Leu Phe Leu
gta gca aca gct ac aggtaagggg ctcacagtag caggcttgag gtctggacat
                                                                       104
Val Ala Thr Ala Thr
```

15

ata	tatg	ggt	gaca	atga	ca t	ccac	tttg	c ct	ttct	ctcc	ac				c tcc s Ser	159
gac Asp 20		cag Gln	ctg Leu	acc Thr	cag Gln 25	agc Ser	cca Pro	agc Ser	agc Ser	ctg Leu 30	agc Ser	gcc Ala	agc Ser	gtg Val	ggt Gly 35	207
gac Asp	aga Arg	gtg Val	tcc Ser	atc Ile 40	tct Ser	tgt Cys	aga Arg	tcc Ser	agt Ser 45	cag Gln	agc Ser	att Ile	gta Val	cat His 50	agt Ser	255
aat Asn	gga Gly	aac Asn	acc Thr 55	tat Tyr	tta Leu	gaa Glu	tgg Trp	tac Tyr 60	cag Gln	cag Gln	aag Lys	cca Pro	ggt Gly 65	aag Lys	gct Ala	303
cca Pro	aag Lys	ctg Leu 70	ctg Leu	atc Ile	tac Tyr	aaa Lys	gtt Val 75	tcc Ser	aac Asn	cga Arg	ttt Phe	tcc Ser 80	gga Gly	gtg Val	cca Pro	351
gac Asp	aga Arg 85	ttc Phe	agc Ser	ggt Gly	agc Ser	ggt Gly 90	agc Ser	ggt Gly	acc Thr	gac Asp	ttc Phe 95	acc Thr	ttc Phe	acc Thr	atc Ile	399
agc Ser 100	agc Ser	ctc Leu	cag Gln	cca Pro	gag Glu 105	gac Asp	atc Ile	gcc Ala	acc Thr	tac Tyr 110	tac Tyr	tgc Cys	ttt Phe	caa Gln	ggt Gly 115	447
tca Ser	cat His	gtt Val	cct Pro	ccg Pro 120	acg Thr	ttc Phe	ggc Gly	ggc Gly	999 Gly 125	acc Thr	aag Lys	gtg Val	gag Glu	atc Ile 130	aaa Lys	495
cgtç	gagta	aga a	attta	aact	t tg	gette	ctca	gtt	ggat	cc						534
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)> 24 Gly		Ser	Cys 5	Ile	Ile	Leu	Phe	Leu 10	Val	Ala	Thr	Ala	Thr 15	Gly	
Val	His	Ser	Asp 20	Ile	Gln	Leu	Thr	Gln 25	Ser	Pro	Ser	Ser	Leu 30	Ser	Ala	
Ser	Val	Gly 35	Asp	Arg	Val	Ser	Ile 40	Ser	Cys	Arg	Ser	Ser 45	Gln	Ser	Ile	

Val His Ser Asn Gly Asn Thr Tyr Leu Glu Trp Tyr Gln Gln Lys Pro 50 55 60

65 65	s Ala	PIO	гуѕ	70	ьeu	iie	Tyr	гÀз	75	ser	Asn	Arg	Pne	Ser 80		
Gly Va	l Pro	Asp	Arg 85	Phe	Ser	Gly	Ser	Gly 90	Ser	Gly	Thr	Asp	Phe 95	Thr		
Phe Th	r Ile	Ser 100	Ser	Leu	Gln	Pro	Glu 105	Asp	Ile	Ala	Thr	Tyr 110	Tyr	Сув		
Phe Gl	n Gly 115		His	Val	Pro	Pro 120	Thr	Phe	Gly	Gly	Gly 125	Thr	Lys	Val		
Glu Il 13	_															
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atatato	jggt (gacaa	itgac	a to	cact	ttgc	ctt	tete	tcc	ac a				tcc	161	
cag gto Gln Val 20	caa Gln	ctg Leu	cag Gln	cag Gln 25	tct Ser	gga Gly	gct Ala	gag Glu	gtc Val 30	aag Lys	aag Lys	cct Pro	gga Gly	tct Ser 35	209	
agc gto Ser Val	: aag . Lys	gtc Val	tcc Ser 40	tgc Cys	aag Lys	gct Ala	tct Ser	999 Gly 45	tat Tyr	acc Thr	ttc Phe	aga Arg	aac Asn 50	tat Tyr	257	
gga ato	, aac	tgg	gtg	aga	cag	gct	cca	gga	cag	ggt	tta	gag	tgg	atg	305	

Gly	Met	Asn	Trp 55	Val	Arg	Gln	Ala	Pro 60		Gln	Gly	Leu	Glu 65	Trp	Met	
	tgg Trp															353
aag Lys	gga Gly 85	cgg Arg	ttt Phe	gcc Ala	ttc Phe	aca Thr 90	gcc Ala	gac Asp	gaa Glu	tct Ser	acc Thr 95	aac Asn	act Thr	gcc Ala	tat Tyr	401
atg Met 100	gag Glu	ctg Leu	tct Ser	agc Ser	ttg Leu 105	aga Arg	tct Ser	gag Glu	gac Asp	acg Thr 110	gct Ala	ttc Phe	tat Tyr	ttc Phe	tgt Cys 115	449
gca Ala	aga Arg	aag Lys	gga Gly	tgg Trp 120	atg Met	gat Asp	ttc Phe	aac Asn	ggt Gly 125	agt Ser	agc Ser	ctc Leu	gac Asp	tac Tyr 130	tgg Trp	497
ggc	caa Gln	Gl ^à aaa	acc Thr 135	ccg Pro	gtc Val	acc Thr	gtc Val	tcc Ser 140	tca Ser	ggt	gagt	cct (tacaa	acct	et	547
ctc	ttcta	att o	cagct	taaa	at a	gattt	tacı	t gc	attt	gttg	9999	ggga	aat g	gtgtg	gtatct	607
gaa	tttca	agg t	cato	gaag	ga ci	aggg	gacad	c cti	tggga	agtc	agaa	aagg	gtc a	attgg	ggagcc	667
cgg	gctga	atg o	cagac	agad	ca to	cctca	agcto	c cca	agact	tca	tgg	ccaga	aga t	ttat	aggat	727
cc																729
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	0> 26 Gly		Ser	Cys 5	Ile	Ile	Leu	Phe	Leu 10	Val	Ala	Thr	Ala	Thr 15	Gly	
Val	His	Ser	Gln 20	Val	Gln	Leu	Gln	Gln 25	Ser	Gly	Ala	Glu	Val 30	Lys	ŗàs	
Pro	Gly	Ser 35	Ser	Val	Lys	Val	Ser 40	Cys	Lys	Ala	Ser	Gly 45	Tyr	Thr	Phe	
Arg	Asn 50	Tyr	Gly	Met	Asn	Trp 55	Val	Arg	Gln	Ala	Pro 60	Gly	Gln	Gly	Leu	
Glu 65	Trp	Met	Gly	Trp	Ile 70	Asn	Thr	Tyr	Thr	Gly 75	Glu	Pro	Thr	Tyr	Ala 80	

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Asp Asp Phe Lys Gly Arg Phe Ala Phe Thr Ala Asp Glu Ser Thr Asn
                  85
Thr Ala Tyr Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Phe
Tyr Phe Cys Ala Arg Lys Gly Trp Met Asp Phe Asn Gly Ser Ser Leu
                             120
Asp Tyr Trp Gly Gln Gly Thr Pro Val Thr Val Ser Ser
<210> 27
<211> 4
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<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
<400> 27
Gly Gly Gly Ser
<210> 28
<211> 16
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      primer
<400> 28
acagtcactg agctgg
                                                                    16
<210> 29
<211> 36
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      primer
<400> 29
gccggatcct gactggatgg tgggaagatg gataca
                                                                    36
<210> 30
<211> 24
<212> DNA
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<213> Artificial Sequence

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<220>
<223> Description of Artificial Sequence: Synthetic
<400> 30
gacattcagc tgacccagtc tcca
                                                                    24
<210> 31
<211> 33
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      primer
<400> 31
ctcactggat ggtgggaaga tggatacagt tgg
                                                                    33
<210> 32
<211> 22
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      primer
<400> 32
aggtsmarct gcagsagtcw gg
                                                                   22
<210> 33
<211> 30
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      probe
<400> 33
agactgcagg agagctggga aggtgtgcac
                                                                   30
<210> 34
<211> 30
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      probe
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30

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<400> 34
gaagcacacg actgaggcac ctccagatgt
<210> 35
<211> 15
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      linker
<400> 35
Gly Gly Gly Ser Gly Gly Gly Ser Gly Gly Gly Ser
<210> 36
<211> 4
<212> PRT
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      peptide
<400> 36
Phe Lys Tyr Lys
 1
<210> 37
<211> 4
<212> PRT
<213> Artificial Sequence
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      peptide
<220>
<221> MOD_RES
<222> (1)
<223> Lys (DTPA)
<220>
<221> MOD_RES
<222> (3)
<223> Lys (DTPA)
<220>
<221> MOD RES
<222> (4)
<223> Lys(Tscg-Cys); Cys not part of peptide backbone
```

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<220>
<223> c-term amidated
<400> 37
Lys Tyr Lys Lys
<210> 38
<211> 149
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 38
ggctcaccgg tgtaggtgtt tatccagccc atccactcta aaccctgtcc tggagcctgt 60
ctcacccagt tcattccata gtttctgaag gtatacccag aagccttgca ggagaccttg 120
acgctagatc caggcttctt gacctcagc
<210> 39
<211> 149
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 39
tcgaggctac taccgttgaa atccatccat ccctttcttg cacagaaata gaaagccgtg 60
teeteagate teaagetaga cageteeata taggeagtgt tggtagatte gteggetgtg 120
aaggcaaacc gtcccttgaa gtcatcagc
<210> 40
<211> 37
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 40
ccaactgcag cagtctggag ctgaggtcaa gaagcct
                                                                   37
<210> 41
<211> 20
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 41
ggctcaccgg tgtaggtgtt
                                                                    20
<210> 42
<211> 44
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
acctacaccg gtgagccaac atatgctgat gacttcaagg gacg
                                                                    44
<210> 43
<211> 47
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 43
ggtgaccggg gtcccttggc cccagtagtc gaggctacta ccgttga
                                                                    47
<210> 44
<211> 140
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 44
gaaactttgt agatcagcag ctttggagcc ttacctggct tctgctggta ccattctaaa 60
taggtgtttc cattactatg tacaatgctc tgactggatc tacaagagat ggacactctg 120
tcacccacgc tggcgctcag
                                                                   140
<210> 45
<211> 131
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
     oligonucleotide
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<400> 45
ggtcccgccg ccgaacgtcg gaggaacatg tgaaccttga aagcagtagt aggtggcgat 60
gtcctctggc tggaggctgc tgatggtgaa ggtgaagtcg gtaccgctac cgctaccgct 120
gaatctgtct g
<210> 46
<211> 41
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 46
cagetgacee agageecaag cageetgage geeagegtgg g
                                                                    41
<210> 47
<211> 43
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 47
ctggcactcc ggaaaatcgg ttggaaactt tgtagatcag cag
                                                                   43
<210> 48
<211> 37
<212> DNA
<213> Artificial Sequence
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 48
caaccgattt tccggagtgc cagacagatt cagcggt
                                                                   37
<210> 49
<211> 33
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      oligonucleotide
<400> 49
gatctccacc ttggtcccgc cgccgaacgt cgg
                                                                   33
```

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<210> 50
<211> 13
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
      linker
<400> 50
agcttgcggc cgc
                                                                   13
<210> 51
<211> 13
<212> DNA
<213> Artificial Sequence
<220>
<223> Description of Artificial Sequence: Synthetic
<400> 51
gatcgcggcc gca
                                                                   13
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